IN THE CLAIMS

Please amend the claims as follows:

1. (Withdrawn) A method of p-type doping in ZnO comprising:

forming an acceptor-doped material having ZnO under reducing conditions, thereby insuring a high donor density; and

annealing the specimens of said acceptor-doped material at intermediate temperatures under oxidizing conditions so as to remove intrinsic donors and activate impurity acceptors.

2. (Withdrawn) The method of claim 1, wherein said reducing conditions comprise a hydrogen containing atmosphere.

3. (Withdrawn) The method of claim 1, wherein said reducing conditions comprise a non- hydrogen containing atmosphere.

4. (Withdrawn) The method of claim 1, wherein said acceptor-doped material comprises a substrate, a n-type ZnO layer deposited on said substrate, and a p-type layer deposited on said n-type ZnO layer.

5. (Withdrawn) The method of claim 1, wherein said intermediate temperatures comprise a temperature range between 200 °C and 700 °C.

6. (Withdrawn) A method of forming p-n junctions using p-type ZnO comprising:

forming an acceptor-doped material having ZnO under reducing conditions, thereby insuring a high donor density; and

annealing the specimens of said acceptor-doped material at intermediate temperatures under oxidizing conditions so as to remove intrinsic donors and activate impurity acceptors.

7. (Withdrawn) The method of claim 6, wherein said reducing conditions comprise a hydrogen containing atmosphere.

8. (Withdrawn) The method of claim 6, wherein said reducing conditions comprise a non- hydrogen containing atmosphere.

9. (Withdrawn) The method of claim 6, wherein said acceptor-doped material comprises a substrate, a n-type ZnO layer deposited on said substrate, and a p-type layer deposited on said n-type ZnO layer.

10. (Withdrawn) The method of claim 6, wherein said intermediate temperatures comprises a temperature range between 200 °C and 700 °C.

11. (Currently Amended) A wide band gap semiconductor device comprising:

a substrate;

an annealed n-type ZnO layer directly positioned on said substrate, said annealed n-type ZnO layer comprises Ga as a dopant to produce n-type conductivity; and

an annealed p-type ZnO layer directly positioned on said annealed n-type ZnO layer, said annealed p-type ZnO layer comprises nitrogen deposited under hydrogen reducing conditions as a dopant to produce p-type conductivity~~uses an intrinsic donor to increase donor concentration and to obtain high impurity acceptor density of an acceptor doped material, said intrinsic donor is removed during annealing~~.

12. (Previously Presented) The wide band gap semiconductor device of claim 11, wherein said acceptor-doped material is exposed to a hydrogen containing atmosphere.

13. (Previously Presented) The wide band gap semiconductor device of claim 11, wherein said acceptor-doped material is exposed to a non- hydrogen containing atmosphere.

14. (Cancelled).

15. (Cancelled).

16. (Currently Amended) A p-n junction comprising:

a substrate;

an annealed n-type ZnO layer directly positioned on said substrate, said annealed n-type ZnO layer comprises Ga as a dopant to produce n-type conductivity; and

an annealed p-type ZnO layer directly positioned on said annealed n-type ZnO layer, said annealed p-type ZnO comprises nitrogen deposited under hydrogen reducing conditions as a dopant to produce p-type conductivity~~layer uses an intrinsic donor to increase donor concentration as well as high impurity acceptor density of an acceptor dope material, said intrinsic donor is removed during annealing~~.

17. (Previously Presented) The p-n junction of claim 16, said acceptor-doped material is exposed to a hydrogen containing atmosphere .

18. (Previously Presented) The p-n junction of claim 16, wherein said acceptor-doped material is exposed to a non- hydrogen containing atmosphere .

19. (Cancelled)

20. (Cancelled)